Defense Supply Center Richmond

DLA Sustainment Engineering *Reliability Initiative*

Aviation Engineering Directorate
Defense Supply Center Richmond

BACKGROUND

- **Facts:**
  - **DLA manages 4.6M items for DOD, other agencies and our allies.**
  - **Some of the items are cost and readiness drivers.**
- **Questions:**
  - **How big is the problem?**
  - **Who pays to redesign and improve these items?**
  - **Who benefits from improvements?**

The Reliability Initiative

- **Refined Project Development And Selection Process**
  - **Selection Criteria: Readiness, Customer Commitment, Return On Investment, Clear Approach, Cost, Risk, Broad Applicability**
- **Developed Relationships With Service Engineering And Logistics Organizations**
- **Initiated Technology Insertion Efforts To Support DoD Aging Aircraft And Other Technology Programs Across Services**
- **Engaged the Reliability Analysis Center (RAC), Non-profit DoD R&M Center of Excellence To Validate Reliability Predictions From New Designs**
- **Multi-platform Project Opportunities Have Been Identified**
- **Sharing Costs With Service Customers In Some Programs**

FUNDING STATUS

- DLA Command Has Provided $16M For The Reliability Initiative
- Total Of Fifty Projects Across Three Services Have Been Approved For Funding
  - Work Underway In Thirty-Seven Projects
  - Funds For Remaining Projects To Be Obligated In August 2004
- Sustainment Engineering Has Requested $22M For The Initiative For FY05

FY04 FUNDED PROJECTS

- **Navy**
  - 18 Projects Involving F-404, T64, T700, F/A-18 A-D, E2-C2, EA-6B, H-60, Navy Aging Aircraft Program And NAVAIR Integrated In-Service Reliability Program
  - Project Funding: $4.71M Estimated Savings $70.37M
- **Army**
  - 17 Projects Involving CH-47, UH-60, OH-58
  - Project Funding: $5.84M Estimated Savings: $109.29M
- **Air Force**
  - 11 Projects Involving A-10, B-1B, B-52, C-5, C-130, KC-135, F-15, F-16
  - Project Funding: $3.14M Estimated Savings: $35.71M

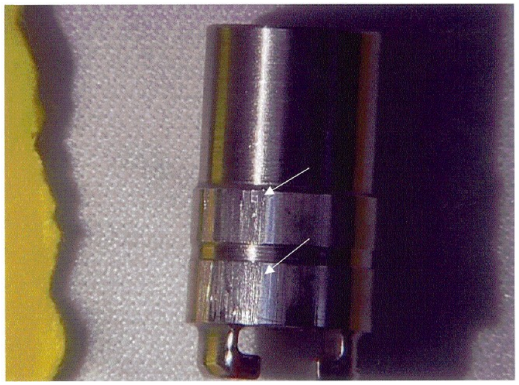
ENGAGING THE SERVICES

Technical Communities Are Structured Differently Across Services

- **Navy**
  - NAVAIR Program Management Aviation (PMA) Offices
  - NAVAIR Integrated In-Service Reliability Program (IISRP)
  - Navy Aging Aircraft Program
  - NAVAIR Aviation Equipment Reliability and Maintainability Improvement Program (AERMIP)
- **Army**
  - AMCOM IPT Chartered At Aviation & Missile Research, Development And Engineering Center At Redstone Arsenal
- **Air Force**
  - Program And Engineering Offices Located At Three Air Logistics Centers
  - Wright Patterson AFB

F/A-18 A-D EMERGENCY MODE VALVE (EMV)

Problem: EMV Inside Switching Valve Experiences Galling Between Piston and Sleeve. Switching Valve Fails To Shift And Cannot Supply Backup Hydraulic Power To Control Surfaces. Two Mishaps Resulted In Loss Of Aircraft.

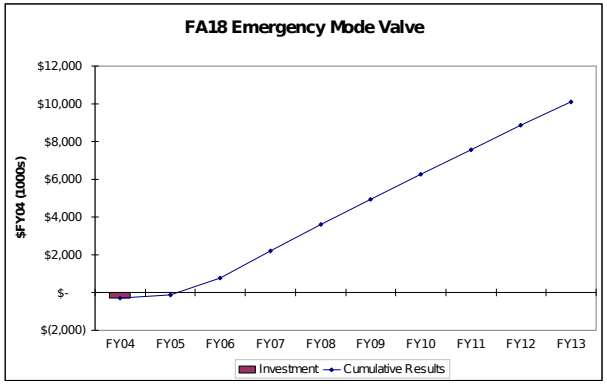


Galling Damage To EMV Piston

Solution: DSCR Funds And Participates With NAVAIR FST To Test And Qualify New EMV.

Project Cost: $285K

Benefits: Goal Is To Improve EMV And Extend Switching Valve Life From 800hrs MTBF To 1900hrs MTBF. Navy Will Realize Estimated $10.4M Savings Over Ten Years.



HELICOPTER WINDSHIELD SACRIFICIAL LAMINATES

Problem: Windshields Are Eroded By Sand And Debris.

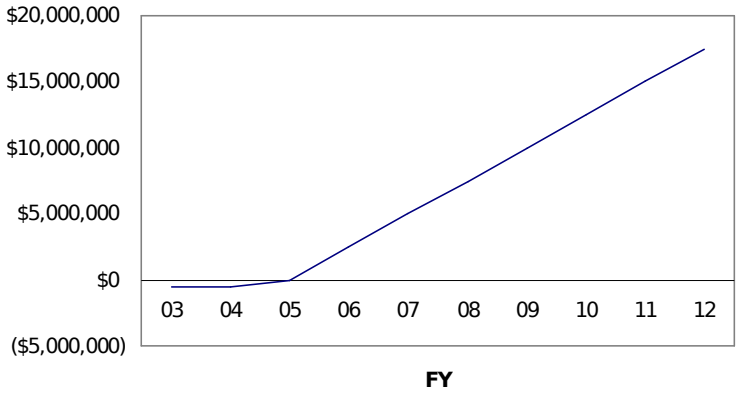
Solution: Sacrificial Windshield Laminate Layers, Applied In The Field. Targeted The UH-60 Initially, Gen. Kern (AMC) Asked To Expand To Include CH-47 and HMMWV (Impact Resistance).

Project Cost: $500K

Benefits: Savings Of $18M Over 10 Years And Reduction Of A Significant Readiness Degrader. Army Sharing Costs By Funding HMMWV Research. Payback At 2.5 Years

Schedule: Laboratory Tests Complete. Brownout Test At Yuma

General Kern (Commander, AMC) Asked For This Project To Be



PITOT TUBES
(F-15, F16 & KC-135 Aircraft)

NSN: Multiple (6) SOS: S9G

Problem: Previous pitot tube project (T-38) improved reliability, de-icing & sourcing issues. Testing uncovered de-icing problems in F-16 & KC-135.

Proposed Solution: Re-engineer the 6 pitot tubes with a new supplier, incorporating reliability and material improvements.

Schedule: The project will take 24 months to complete. Final design changes implemented through attrition.

Cost: $800K in FY04 & $400K in FY05

Benefits: Reduced unit costs and additional supplier. Potential for shared savings for other OEMs during testing. Estimate accumulated savings of $13.2M over next ten years.

COST SHARING

Sharing The Cost Of Some Projects With Services

- OH-58 Kiowa Avionics
- Helicopter/HMMWV Windshield Laminates
- B-1B Insulation Cover Redesign for the Pressure Regulator & APU Isolation Valve
- A-10 Blowing Agent Replacement for Ballistic Foam
- T-700 White Harness Redesign
- H-60 Door Latch Redesign

SUPPORTING CUSTOMERS

- **Program Endorsed By:**
  - Navy: Ms. Debbie Vergos HQ AIR 6.2 Program Manager Integrated In-Service Reliability Program
  - Navy: Mr. Bob Ernst HQ AIR 4.1D Aging Aircraft Integrated Product Team
  - Army: Mr. Phil Hodges, Director, Engineering Directorate, AMRDEC
  - Air Force: Mr. John Over, Director Of Engineering (SES), Oklahoma City ALC
- **General Kern (AMC) Supports The Windshield Project; Wants To Expand Rapidly To Other Platforms**
- **General Thompson (TACOM) Participated In HMMWV Windshield Tests….By Throwing Rocks At Test Vehicle**
- **Mr. Wynne (Acting USD AT&L) Briefed On Laser Peening Technology On April 6, 2004**

CUSTOMER FEEDBACK

- **Positive Feedback from our Customers**
  - ***"The work you're doing is and will continue to have a positive influence on the readiness of the F/A-18 fleet."*** **- Mr. Bill Taylor, F/A-18 Fleet Support Program Manager**
  - ***"The process laid out by the DLA/RAM IPT is the model for getting practical reliability improvements to the soldier. We are developing a Reliability Improvement IPT for AMCOM managed items based upon your work."*** **– Mr. Ronald Chronister, Engineering Director, AMRDEC**

CUSTOMER FEEDBACK (cont.)

- **"*This program shows that DLA has a strong commitment toward putting reliable equipment in the hands of the warfighter. They really put their money wheretheir mouth is.*" - CW4 Scott Beiler, AH-64 Pilot, 3rd ID.**
- **"*I applaud (the) Sustaining Engineering Center of Excellence (SECOE) initiative to reduce operating costs through reliability improvements to DLA-managed items.*" - John Over, Director of Engineering (SES), Air Force Okalahoma City Air Logistics Center**

BENEFITS TO DLA

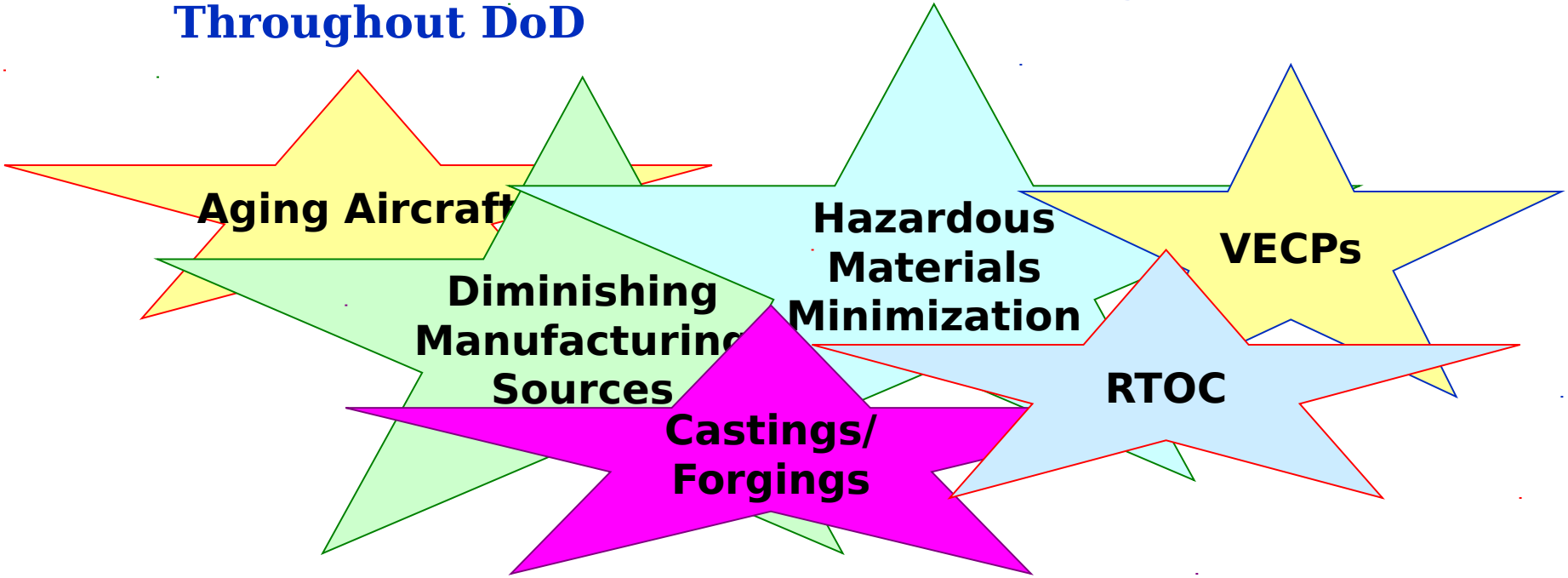
- **Better Forecasts For DLA-managed parts**
- **New Or Improved Products Will Be Created And DLA Will Manage Them**
  - Helicopter/HMMWV Windshield Laminates
  - Environmentally Friendly Ballistic Foam
- **Generates Good Will , Doors Opened, Improves Communications With ESAs And Program Offices**
- **Value-Added Service For PBL Contracts And Strategic Supplier Alliances**

SCORECARD FOR INITIATIVES

- **Program Costs And Benefits Will Be Reported To DLA Under The New Scorecard For Initiatives**
- **DLA Costs:**
  - **FY03: $1.36M**
  - **FY04: $15.78M**
- **DoD Savings:**
  - **FY05 Through FY15: $279.4M**

SYNERGY WITH OTHER TECHNOLOGY PROGRAMS

This Initiative Compliments Other Programs Throughout DoD



DLA Is In A Unique Position As An Integrator Across Services And Weapon Systems

AVIATION SUPPLY CHAIN APPROACH

- **Single Face To Customer**
- **Focal Points At Each ICP**
- **Some Projects Involve Aviation Items Managed At Other ICPs**
  - **DSCC: 5**
  - **DSCP: 11**
- **Coordination With DSCC/DSCP:**
  - **Inform Them Of Candidate Projects**
  - **Follow With Forecasting Information**
- **DSCC Program Will Cover Land And Maritime**

CHALLENGES

- **Continued Funding Is Essential To Continued Collaboration**
- **Technology Development And Insertion Projects Are Long-Term And Require Long-Term Agency Commitment**

SUMMARY

- **Relationships With Customers Getting Stronger**
- **Customers Recognize DLA Value to Reliability**
- **DLA Plans To Continue The Reliability Initiative**

Backup Slides Follow

NAVY PROJECTS – FY04

Weapon	Project	Cost		
		Savings 1	Savings 2	
Various	DLA/NAVAIR IISRP Integration	$199K	N/A	N/A
F/A-18 A-D	Periseal Couplings Redesign	$447K	$ 2.90M	$ 3.86M
F/A-18 A-D	Emergency Mode Valve Qualification	$285K	$10.38M	$15.23M
F/A-18 A-D	Nose Landing Gear Slipper Seal	$419K	$ 138K	$ 2.58M
T700	“White” Harness Redesign	$350K	$ 5.42M	$ 6.14M
T64	Bellows Material Upgrade	$ 75K	$ 4.97M	$ 5.10M
T64	Bellows Housing Redesign	$100K	$ 2.05M	$ 2.09M
F404	#4 Nitrided Bearing	$282K	$ 2.05M	$ 5.73M
E2-C2	Generator Cooling Duct Redesign	$225K	$ 1.98M	$ 2.19M
F/A-18 A-D	Aileron Seals Redesign & Qualification	$183K	$ 6.85M	$ 6.85M
F/A-18 A-D	Rudder Seals Redesign & Qualification	$183K	$ 8.28M	$

ARMY PROJECTS – FY04

Weapon	Project	Cost	Savings
CH-47	Pressure Transducer	$265K	$ 3.2M
CH-47	Horizontal Hinge Pin Assy	$880K	$20.0M
CH-47	Vertical Hinge Pin Bearings	$286K	$ 3.3M
N/A	Program Management	$300K	N/A
60/47	Sacrificial Windshield	$200K	Unk.
UH-60	Consumables	$525K	$16.0M
OH-58	Kiowa Avionics	$165K	Unk.
CH-47	Self-locking Bolts	$350K	$ 6.10M
CH-47	Cartridge Solenoid Valve	$250K	$ 0.66M
CH-47	Navigational Light	$200K	$ 1.30M
CH-47	Dust and Moisture Boot	$220K	$ 4.90M
CH-47	Friction Lining	$300K	$ 1.40M
CH-47	Pitch Change Link	$640K	$ 4.00M
AH-64	Pitch Change Link Bearing	$450K	$ 7.01M
Various	Hydraulic Fluid Filters	$480K	$39.82M
CH-47	Yoke Shaft Bolt	$ 75K	$ 674K
CH-47	Utility Hydraulic Pump	$250K	$ 787K
	TOTAL	$ 5.836M	$109.29M

AIR FORCE PROJECTS – FY04

Weapon	Project	Cost	Savings
A-10	Ballistic Foam Replacement	$430K	$ 3.00M
A-10	Slat Strut	$ 70K	$ 840K
B-1B	NVIS Project	$ 20K	$ 220K
B-1B	Valve & Pipe Insulation Covers	$ 80K	$ 1.56M
B-52	Trailing Edge Panels	$750K	$ 5.20M
C-5	Gaskets for Fuel Access Covers	$ 4K	Unk.
C-130	Shell Dome	$175K	$ 3.15M
F-16	L/E Flap Rotary Actuator	$208K	$ 3.00M
KC-135	Fuel Access Covers	$525K	$ 4.43M
F-15, F-16, KC-135	Pitot Tubes	$800K	$13.20M
A-10	Slat Strut Restrictor Valve	$ 80K	$ 1.10M
		TOTAL	$3.142M

$35.71M